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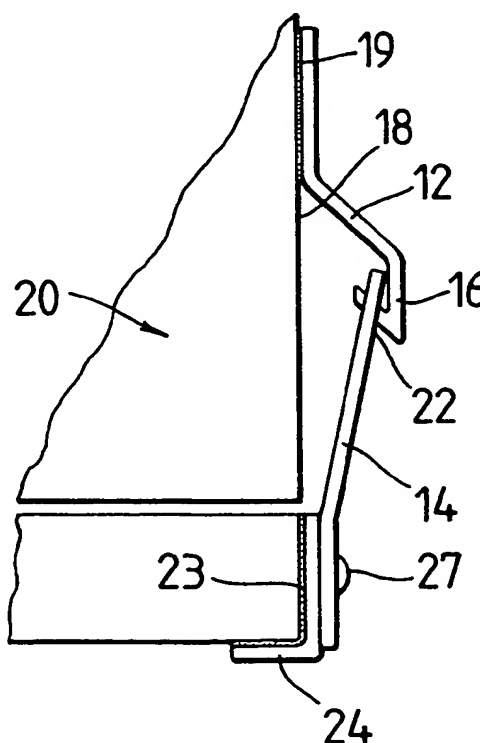
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(54) **Child-proof safety catch.**

(57) A safety catch which can be used, for example, on a refrigerator door to prevent a child gaining access. The catch comprises a hooked arm (12) and an apertured arm (14), each fitted on a respective one of the outside wall (18) and the door (26) of the refrigerator. One of the arms (14) is displaceable between an operative position in which the hook (16) engages the aperture (22) as the door is closed to prevent re-opening, and an inoperative position in which no such engagement occurs. The catch can thus be quickly and conveniently disabled (without removal) when its operation is not required.

FIG. 2



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The invention relates to catch mechanisms. More particularly the invention relates to safety catches for preventing small children from gaining access to the contents of storage units such as cupboards, drawers and refrigerators.

Catches that prevent storage units from being opened to secure their contents against the prying hands of small children are well-known. Such catches, generally known as child-proof catches, are designed to prevent a child from being able to gain access while still allowing an adult to release the catch to fully open the storage unit when required.

According to the present invention there is provided a catch mechanism comprising an engagement member and a catch member, each adapted to be mountable on respective relatively movable portions of a storage unit, one of said engagement and catch members (the displaceable member) being displaceable between an operative position and an inoperative position whereby in the operative position the engagement and catch members come into mutual engagement as the storage unit portions are brought together to prevent or restrict relative movement of said portions, and in the inoperative position the engagement and catch members are not brought into mutual engagement as the storage unit portions are brought together so that no limitation is imposed on the relative movement of the storage unit portions.

It is an important design feature of prior art catches that they automatically fasten when the door or drawer is closed to ensure their proper operation. However, once installed, especially by households that entertain young children on a temporary basis, these catches can be a source of some not inconsiderable irritation to adults. The present invention resides, at least in part, in the recognition of this inherent problem of the existing safety-catch mechanisms. A catch which can be switched between an operative and an inoperative position can be permanently mounted on a storage unit in readiness for a visit by small children, without the inconvenience of an adult having to release the catch at other times when its operation is not required.

Such catches can be used to fasten any storage unit including, by way of example only, those of refrigerators, larders and medicine cabinets.

In preferred embodiments of the invention, the engagement and catch members are releasable from said mutual engagement by an action which is distinct from the displacement of the displaceable member between the operative and inoperative positions.

There are several preferred manners in which one or other of the engagement and catch members can be displaceable in order to put the present invention into effect. In a first preferred arrangement, the displaceable member is rotatably mounted with respect to the portion of the storage unit on which it is adapted to be mounted. The displaceable member is

then preferably rotatable between said operative position in which it protrudes from the storage unit for engagement with the other member and said inoperative position in which the displaceable member lies along the outside of the storage unit to prevent such engagement.

In another preferred arrangement, the displaceable member is slidably mounted with respect to the storage unit portion on which it is adapted to be mounted.

The displaceable member may comprise a mounting member fixedly securable to one of the storage unit portions and an arm member movably mounted on the mounting member. In order to ensure that the displaceable member remains in the chosen position the mounting member and the arm member preferably comprise means for mutual engagement in at least one of the operative and inoperative positions. The means for mutual engagement may comprise a complementary ridge and recess formed in respective ones of the mounting member and the arm member.

The catch and engagement members preferably comprise an aperture and a hook, in which case the aperture can form part of the displaceable member.

For reasons of safety the hook is preferably adapted to be inward-facing with respect to the surface of the storage unit portion on which it is to be mounted.

In a further preferred arrangement, the displaceable member is adapted to be retractable relative to the storage unit portion on which it is to be mounted.

Preferably at least one of the catch and engagement members comprises resilient plastics material.

For convenient fixing of the catch mechanism to the storage unit, the engagement and catch members may have respective self-adhesive pads.

A specific embodiment will now be described by way of example only with reference to Figures 1 to 7 of the drawings, in which:

Figure 1 is a plan view of the catch mechanism in the locked (operative) condition;

Figure 2 is a side elevation of the catch mechanism of Figure 1 in the locked condition;

Figures 3a and 3b are respectively top and side elevations of the hooked arm of the catch mechanism of Figure 1;

Figures 4a and 4b are respectively top and side elevations of the apertured arm of the catch mechanism of Figure 1;

Figures 4c and 4d are respectively sections on lines cc and dd in Figure 4a;

Figures 5a and 5b are respectively top and side elevations of the mounting plate for attachment of the apertured arm of Figures 4a - 4d to a refrigerator;

Figures 5c and 5d are respectively sections on lines cc and dd in Figure 5a;

Figure 5 is an enlargement of part of Figure 5c;

Figure 6 is a plan view of the catch mechanism of Figure 1 in the unlocked (inoperative) condition; and

Figure 7 is a side elevation of the catch mechanism of Figure 1 in the unlocked condition.

Referring to the figures, one embodiment of a catch mechanism in accordance with the invention can be seen in position on a refrigerator door. Similar catch mechanisms can, of course, be made with only minor modification (if any) to perform the same function in use on other storage units. Reference to a refrigerator should, accordingly, be taken to include reference to any storage unit.

In Figures 1 and 2, the catch 10 can be seen in an operative condition. In this condition, the catch operates in a manner similar to that of conventional child-proof safety catches. The catch has a hooked arm 12, and an apertured arm 14. The hooked arm 12 terminates in a hook 16 and is mounted on an outer wall 18 of a refrigerator 20. The hooked arm 12 is attached to the outer wall 18 by an adhesive pad 19, but could be attached by a screw attachment or in any other suitable manner. For reasons of safety, the hook 16 faces inwardly towards the wall 18.

The apertured arm 14 terminates in an aperture 22 and is mounted by means of a mounting plate 24 and an adhesive pad 23 on the edge of the door 26 of the refrigerator 20. The apertured arm 14 is mounted on the mounting plate 24 by a pivot screw 27 for rotation relative thereto. This allows the arm 14 to be rotated from the operative position illustrated in Figures 1 and 2 to the inoperative position illustrated in Figures 6 and 7.

The hooked arm 12 is illustrated in greater detail in Figures 3a and 3b. The arm 12 has a first end 28 designed for attachment to the outer wall of the refrigerator. The hook 16 at the other end of the arm 12 comprises a cam 30 whose function will be explained later. A link 32 extends in a direction designed to dispose the hook 16 at a position remote from the refrigerator wall 18 when mounted for operation. In the present embodiment the link 32 has an angle of approximately 45° to the outer wall 18 of the refrigerator 20 although any other suitable inclination could be adopted.

The apertured arm 14 can be seen in greater detail in Figures 4a - 4d. The arm 14 is profiled to extend from the plane of the refrigerator door edge by an amount sufficient to allow mating engagement with the hook 16. The apertured arm 14 is provided with a second aperture 34 that allows the screw 27 to be inserted in the aperture for attachment to the mounting plate 24. Other manners of attachment allowing the relative rotational movement between the arm 14 and the door, such as a rivet connection, are possible.

The mounting plate 24, to which the apertured arm is attached, is shown in greater detail in Figures 5a - 5d. The mounting plate 24 is designed to be at-

tached to the edge of the door. The mounting plate can be secured by a screw fitting through aperture 36, by adhesive or in any other suitable manner. Preferably, however, self-adhesive pads 23, 19 are respectively used for securing the apertured arm 14 (by means of the plate 24) and the hooked arm 12 to the refrigerator.

The hooked and apertured arms 12, 14 could be mounted, as an alternative, with the hooked arm 12 on the door 26 and the apertured arm 14 on the outer wall 18. The capacity to rotate from an operative to an inoperative position could be given to the arm 12 attached to the outer wall of the refrigerator rather than to the arm 14 attached at the door.

Other manners of operation are also envisaged that allow one or other of the arms 12, 14 (the displaceable arm) to be movable between operative and inoperative positions. For example, the displaceable arm may be retractably movable from, or to, the operative position in which the mating parts coincide when the door is closed. As another example, the displaceable arm may be moved from operative alignment by means of a slidable mounting.

The hook 16 and aperture 22 of the catch mechanism illustrated will be understood by those skilled in the art to provide only one of many examples of the manner in which the safety catch can operate. Any of the conventional catch arrangements used in child-proof catch devices would be equally suitable.

In this particular embodiment, the hooked arm 12 and the apertured arm 14 are formed from a resilient plastics material. The resilience of the material enables at least one of the arms 12, 14 to deform sufficiently for mating engagement to take place as the parts are urged together, while maintaining the mating engagement as the two parts are separated when it is attempted to open the door. One or other of the arms 12, 14 could, however, be formed from a non-deformable material, although for reasons of safety it is preferable that both parts are sufficiently deformable to ensure that the projecting parts do not cause injury or damage. It is also naturally preferable that no external part of the mechanism has any sharp edges.

The hooked arm 12 is profiled to protrude from the refrigerator wall 18. This makes the hook 16 more accessible for mating engagement with the apertured arm 14 and also provides scope for deformation of the arms 12, 14. The apertured arm 14 is likewise profiled to extend away from the plane of the edge of the door 26 so that, on closing the door, the aperture is presented for engagement by the hook.

On closing the door of the refrigerator with the apertured arm 14 in the operative position, the leading edge 33 of the apertured arm 14 strikes the cam 30 of the hooked arm 12. The cam 30 causes the apertured arm 14 to be urged towards the wall 18 of the refrigerator until the aperture 22 coincides with the hook 16. At this point the natural resilience of the

apertured arm 14 urges it away from the wall 18 and into mating engagement with the hook 16.

On attempting to open the door of the refrigerator, the engagement between the hooked and apertured arms will prevent the door from being opened. The deformability of the arms 12, 14 allows an adult to decouple the arms 12, 14. Decoupling can be further facilitated by urging the refrigerator door further closed to depress the door seal. The hook will no longer be in mating connection with the aperture. The hook or aperture can then be deformed out of alignment and the door opened. It is to be noted that the action by which the two arms 12, 14 are released from mutual engagement is distinct from that by which the apertured arm 14 is moved between the 'on' and 'off' positions.

Figures 6 and 7 show the catch mechanism of Figure 1 with the apertured arm 14 rotated through 90 degrees from the position illustrated in Figures 1 and 2. It is a simple matter to rotate the apertured arm 14 from the operative position to ensure that there is no alignment between the aperture 22 and the hook 16 on closing the refrigerator door. When rotated through 90 degrees the apertured arm 14 aligns conveniently with the edge of the door. When in this inoperative position, the refrigerator door can be opened and closed without requiring release of the catch.

If the pivot screw connection is not sufficiently tight, there will be a tendency for the aperture arm 14 to move under gravity into the vertical, inoperative, position. To ensure that the movable arm of the catch stays in its required position, the mounting plate and the inner face of the mounting end of the movable arm may be provided with means for mutual engagement in at least one of the operative and the inoperative positions of the arm. Thus, for example, referring to Figures 4 and 5, the mounting plate 24 may include a ridge in the form of a pip 37 extending in a radial direction from the aperture 36 and the arm 14 may include complementary recesses in the form of grooves 38, 39, 40 extending radially about the aperture 34. In the operative position of the arm 14, the pip 37 is located in the groove 39. In the inoperative position of the arm 14, the pip 37 can sit in one of the grooves 38 and 40. The pip and grooves thus define 'on' and 'off' positions into which the arm 14 can be clicked.

An on/off safety catch of this type is clearly of benefit in a number of situations. Such a catch can be permanently attached to any cupboard door or drawer and conveniently switched between the operative and inoperative conditions as and when required.

Although the present embodiment has been described in relation to a catch attached to the outside of a refrigerator, it will be understood by those skilled in the art that catches of the present invention are equally able to be mounted inside storage containers to allow limited separation of the storage unit portions

when engaged, enabling the catch to be reached and released by an adult from outside the storage unit.

Claims

1. A catch mechanism comprising an engagement member and a catch member, each adapted to be mountable on respective relatively movable portions of a storage unit, one of said engagement and catch members (the displaceable member) being displaceable between an operative position and an inoperative position whereby in the operative position the engagement and catch members come into mutual engagement as the storage unit portions are brought together to prevent or restrict relative movement of said portions, and in the inoperative position the engagement and catch members are not brought into mutual engagement as the storage unit portions are brought together.
2. A catch mechanism according to claim 1, wherein the engagement and catch members are releasable from said mutual engagement by an action which is distinct from the displacement of the displaceable member between the operative and inoperative positions.
3. A catch mechanism according to claim 1 or claim 2, wherein said displaceable member is rotatably displaceable between said operative and inoperative positions.
4. A catch mechanism according to claim 1 or claim 2, wherein said displaceable member is slidably displaceable between said operative and inoperative positions.
5. A catch mechanism according to any one of the preceding claims, wherein said displaceable member comprises a mounting member fixedly securable to one of said storage unit portions and an arm member movably mounted on the mounting member.
6. A catch mechanism according to claim 5, wherein said mounting member and said arm member comprise means for mutual engagement in at least one of said operative and inoperative positions.
7. A catch mechanism according to claim 6, wherein said means for mutual engagement comprises a complementary ridge and recess formed in respective ones of the mounting member and the arm member.

8. A catch mechanism according to any one of the preceding claims, wherein said catch and engagement members comprise an aperture and a hook.

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9. A catch mechanism according to claim 8, wherein said aperture forms part of the displaceable member.

10. A catch mechanism according to claim 8 or claim 9, wherein said hook is adapted to be inward-facing with respect to the surface of the storage unit portion on which it is to be mounted.

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11. A catch mechanism according to any one of the preceding claims, wherein said displaceable member is adapted to be retractable relative to the storage unit portion on which it is to be mounted.

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12. A catch mechanism according to any one of the preceding claims, wherein at least one of the catch and engagement members comprises resilient plastics material.

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13. A catch mechanism according to any one of the preceding claims, wherein said engagement and catch members have respective self-adhesive pads for securing the mechanism to said storage unit portions.

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FIG. 1.

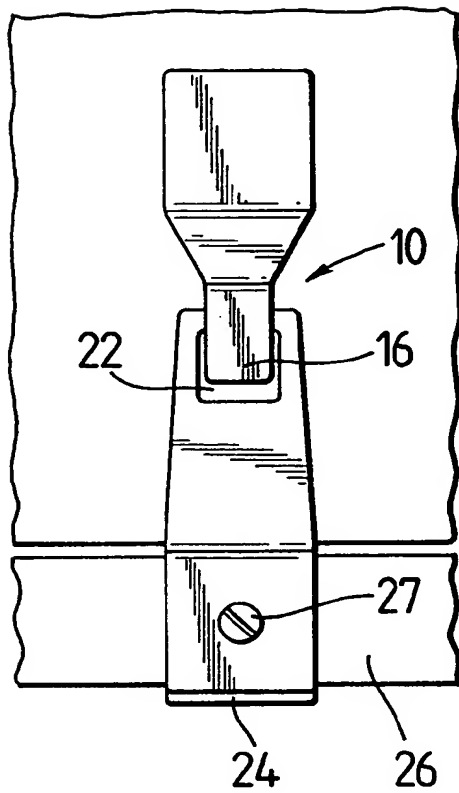


FIG. 2

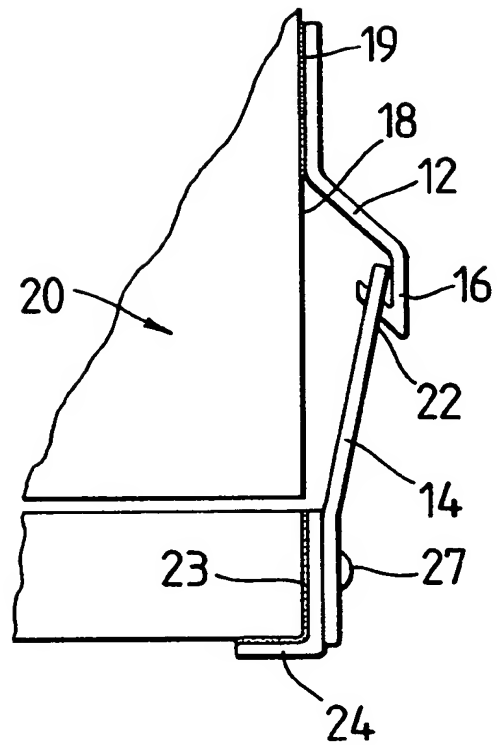


FIG. 3a

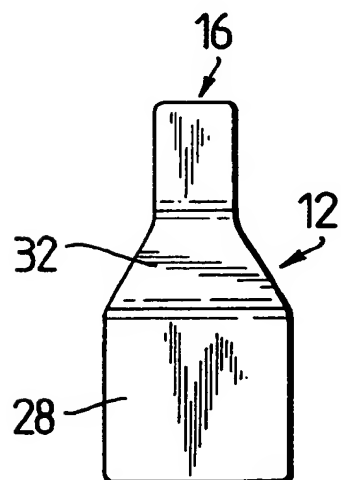


FIG. 3b

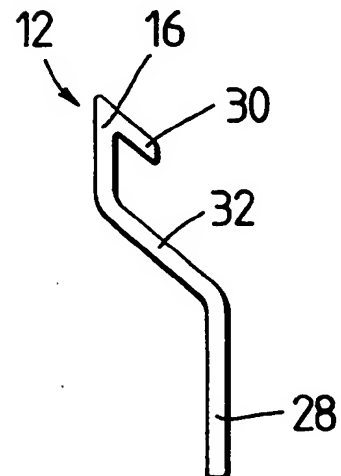


FIG. 4a

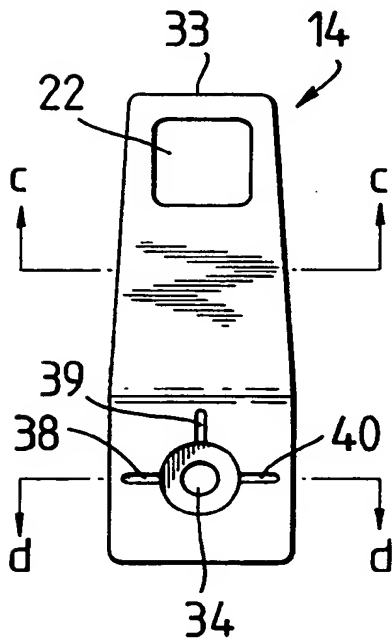


FIG. 4b

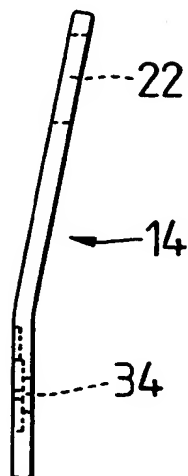


FIG. 4c

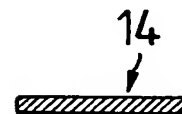


FIG. 4d



FIG. 5a

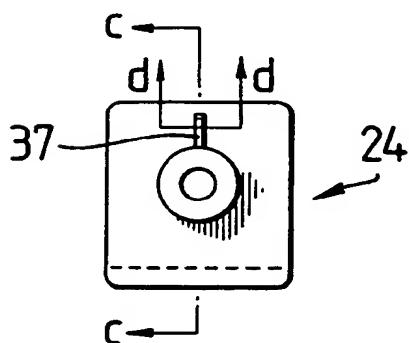


FIG. 5c

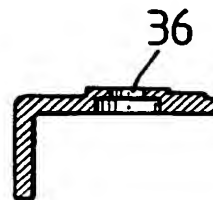


FIG. 5b



FIG. 5d



FIG. 5e

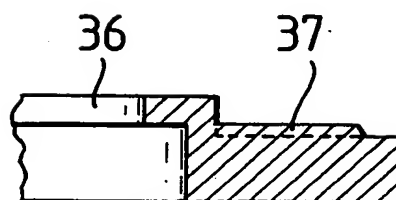


FIG. 6.

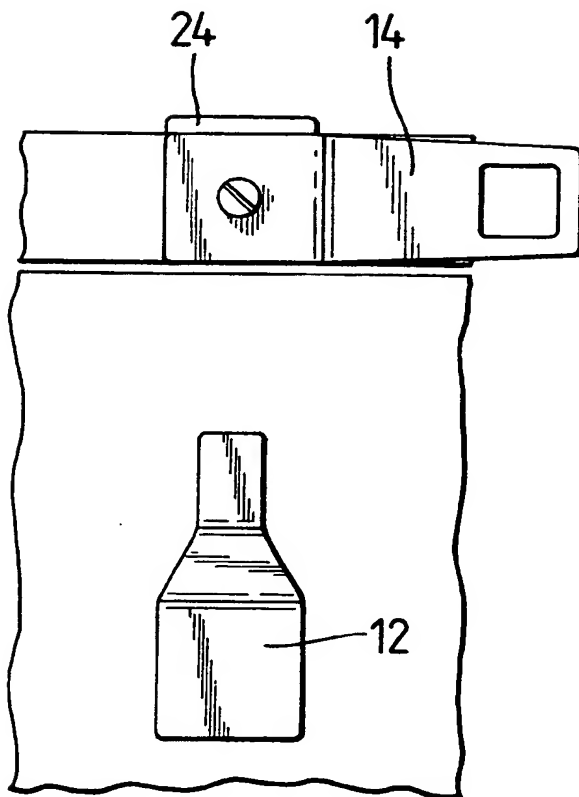
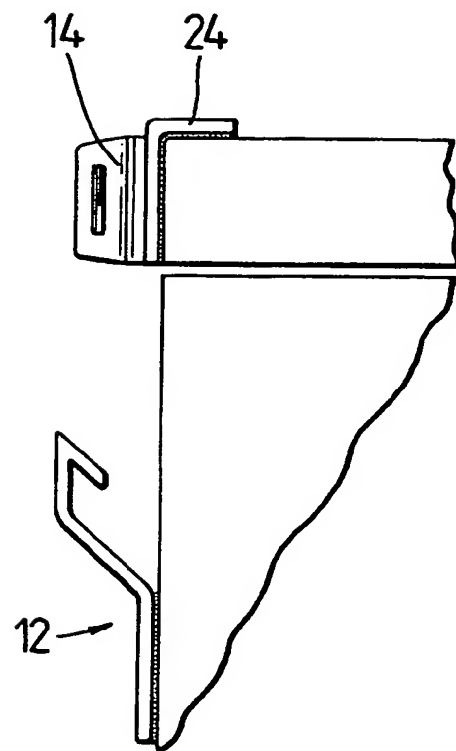


FIG. 7.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 30 3114

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-2 160 255 (LECK) * page 1, line 54 - line 86; figures * ---	1	E05B63/24
A	GB-A-2 083 541 (MAY) * page 3, line 46 - line 84 * * figures 3,4 * ---	1	
A	GB-A-2 109 048 (HALPIN ET AL.) * page 1, line 24 - line 36 * * page 1, line 111 - page 2, line 2; figures 5,6 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E05B E05C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 JUNE 1992	Examiner GIMENEZ BURGOS R.
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